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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/636,308	08/11/2000	Timothy A. Okel	1527A2	7908

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PPG INDUSTRIES INC
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[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

1562

DATE MAILED: 08/22/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/636,308	OKEL ET AL.
Examiner	Art Unit
Elena Tsoy	1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event however may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 08 April 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-18 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1) Certified copies of the priority documents have been received.
 2) Certified copies of the priority documents have been received in Application No. _____.
 3) Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other |

Response to Arguments

1. In view of the Appeal Brief filed on April 8, 2003, PROSECUTION IS HEREBY REOPENED. New grounds of rejection are set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

- (1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,
- (2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Objections

2. Claims 14, 16 are objected to because of the following informalities:

Claim 14, line 4, the formula of claim 14 has the same number VII as formula of claim 2. For examining purposes the formula of claim 14 was interpreted as "VIIa".

Claim 16, line 1, "the process" should be changed to -- "the process".

Double Patenting

3. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground

provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. **Claims 1-3, 5-16, 18** are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1, 6, 8, 11, 12, 15, 16, 18, 19, 20 of U.S. Patent No. 6,384,125 to Bergstrom et al in view of Wagner (US 4,436,847).

Bergstrom et al disclose a process for treating silica filler such as precipitated silica for the use in rubber compositions (See column 15, lines 25-54), which comprises steps substantially identical to those of claimed invention with the use of combination of (a) a non-sulfur organometallic compound such as alkoxysilane such as those of claim 6 (See column 15, lines 32-45) and (b) organometallic hydrophobing compound such as bis(triethoxysilylpropyl)disulfide (See column 16, lines 46-47, 60-61) in a weight ratio of (a) to (b) of at least 0.001 to 1 (See column 15, lines 46-47; claims 11, 12). However, Bergstrom et al fail to teach that instead of bis(triethoxysilylpropyl)disulfide, mercaptoalkylalkoxysilane (Claims 1-5) or a combination thereof (Claim 12) can be used for treating silica filler.

Wagner teaches that either bis(alkoxysilylalkyl)polysulfide of claimed formula (VIIa) or mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane can be used together with alkoxysilane (See column 2, lines 7-39) for treating silica filler (See column 6, lines 50-68; column 8, lines 23-31) in order to improve bond between silica and sulfur curable rubber (See column 2, lines 46-55). In other words, mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane instead of bis(alkoxysilylalkyl)polysulfide in Bergstrom et al since Wagner teaches that mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It is held that "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose." In re Kerkhoven 205 USPQ 1069 (CCPA 1980). Cites In re Susi 169 USPQ 423, 426 (CCPA 1971); In re Crockett 126 USPQ 186; 188 (CCPA 1960). See also Ex parte Quadranti 25 USPQ 2d 1071 (BPAI 1992).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a combination of mercaptoalkylalkoxysilane and bis(alkoxysilylalkyl)polysulfide instead of bis(alkoxysilylalkyl)polysulfide in Bergstrom et al since Wagner teaches that mercaptoalkylalkoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It is well known in the art that properties of a coating composition depend on concentration of components. In other words, concentration limitations are result-effective parameters.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant concentration parameters in a combination of mercaptoalkylalkoxysilane and bis(alkoxysilylalkyl)polysulfide (including those of claim 12) in Bergstrom et al in view of Wagner through routine experimentation in the absence of a showing of criticality.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. **Claims 1-3, 5-16, 18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al (US 6,051,672) in view of Wagner (US 4,436,847).

As to claims 1, 6-8, 14, 15, Burns et al disclose a process of producing chemically modified filler for the use in rubber compositions (See column 1, lines 22-26) comprising reacting an acidic aqueous suspension of colloidal silica (See column 5, lines 25-29) with one or more organosilicon compounds (coupling agent) (See column 4, lines 24-27) at pH within a range of pH 0 to pH 3.5 (See column 5, lines 20-22) in the presence of a water miscible solvent (See column 4, lines 62-65) and optionally a surfactant (See column 5, lines 10-19), thereby forming an acidic suspension of the chemically modified filler (See column 5, lines 45-49); terminating the reaction by adding a base to elevate the pH (See column 5, lines 61-63), i.e. to a pH more than pH 4 since reaction occurs at pH less than pH 4 (See column 5, lines 20-22). The

Art Unit: 1762

one or more organosilicon compounds are (a) bis{3-(triethoxysilyl)propyl}tetrasulfide (bis(alkoxysilylalkyl)polysulfide of claimed formula (VIIa) and (b) alkoxy silanes (non-sulfur organometallic compounds of claimed formula (II) such as diethyldichlorosilane (See column 4, lines 28-41).

Burns et al fail to teach that instead of bis(triethoxysilylpropyl)disulfide, mercaptoalkylalkoxysilane of claimed formula (VII) (Claims 1-3, 16) such as mercaptomethyltrimethoxysilane (Claim 5) in a weight ratio of (a) to (b) of at least 0.05:1 (Claim 1) or 0.05:1 to 10:1 (Claim 10) or 0.2:1 to 2:1 (Claim 11) or a combination of mercaptoalkylalkoxysilane and bis(triethoxysilylpropyl)disulfide in a weight ratio of mercaptoalkylalkoxysilane to bis(triethoxysilylpropyl)disulfide of at least greater than 1:1 (Claims 12, 18); or 5:1 to 50:1 with silica being precipitated silica (Claims 9, 13), can be used for treating silica filler.

Wagner teaches that either bis(alkoxysilylalkyl)polysulfide of claimed formula or mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane can be used together with alkoxy silane (See column 2, lines 7-39) for treating silica filler (See column 6, lines 50-68; column 8, lines 23-31) in order to improve bond between silica and sulfur curable rubber (See column 2, lines 46-55). In other words, mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane instead of bis(alkoxysilylalkyl)polysulfide in Bergstrom et al

Art Unit: 1762

since Wagner teaches that mercaptoalkylalkoxysilane of claimed formula (VII) such as mercaptomethyltrimethoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It is held that "It is prima facie obvious to combine two compositions each of which is taught by the prior art to be useful for the same purpose, in order to form a third composition which is to be used for the very same purpose." In re Kerkhoven 205 USPQ 1069 (CCPA 1980). Cites In re Susi 169 USPQ 423, 426 (CCPA 1971); In re Crockett 126 USPQ 186; 188 (CCPA 1960). See also Ex parte Quadranti 25 USPQ 2d 1071 (BPAI 1992).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used a combination of mercaptoalkylalkoxysilane and bis(alkoxysilylalkyl)polysulfide instead of bis(alkoxysilylalkyl)polysulfide in Bergstrom et al since Wagner teaches that mercaptoalkylalkoxysilane is functionally equivalent to bis(alkoxysilylalkyl)polysulfide for treating silica filler for the use in rubber compositions.

It is well known in the art that properties of a coating composition depend on concentration of components. In other words, concentration limitations are result-effective parameters.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant concentration parameters in a

process of Bergstrom et al in view of Wagner (including those of claims 1, 10, 11, 12, 13) through routine experimentation in the absence of a showing of criticality.

As to silica being precipitated silica. Burns et al further teach that it is well known in the art to treat precipitated silica with organosilanes to render the surface hydrophobic. The colloidal silica can also be rendered hydrophobic and used as filler (See column 1, lines 39-48). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have treated either precipitated silica or colloidal silica in a method of Burns et al with the expectation of providing the desired hydrophobic silica filler for the use in rubber compositions.

6. **Claims 4, 17** are rejected under 35 U.S.C. 103(a) as being unpatentable over Burns et al (US 6,051,672) in view of Wagner (US 4,436,847), as applied above, and further in view of Cruse et al (WO 99/09036).

Burns et al in view of Wagner, as applied above, fail to teach that mercaptoalkylalkoxysilane is blocked.

Cruse et al teach that the use blocked mercaptosilanes in filled rubbers allows the mixing of fillers with organic polymers to proceed while remaining inert toward coupling to the polymer until they are triggered by addition of an appropriate deblocking agent (See Abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used blocked mercaptosilanes for treating silica in a process of Burns et al in view of Wagner with the expectation of providing the desired prevention of premature reaction with a filled rubber, as taught by Cruse et al.

Response to Arguments

7. Applicant's arguments with respect to claims 1-18 have been considered but are moot in view of the new ground(s) of rejection.

8. The prior art made of record and not relied upon is considered pertinent to applicant disclosure.

Araki et al (US 6,022,923) teach that the use of acidic silica as a filler in vulcanizable rubbers may interfere with curing since it adsorbs basic vulcanization accelerators (See column 1, lines 38-42).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is (703) 605-1171. The examiner can normally be reached on 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (703) 308-2333. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

ET

Elena Tsoy
Examiner
Art Unit 1762

May 19, 2003

SBE
SHRIVE M. BECK
PRIMARY EXAMINER
ART UNIT 1762